

California & Drought



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July 2013



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Historical Droughts



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California's 20th & 21st Century Statewide Droughts

- 1918-20
- 1922-24
- 1929-34
- 1947-50
- 1959-61
- 1976-77
- 1987-92
- 2007-09



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1976-77

- State population about 22 million
- 1977 – driest year of record for statewide runoff (21% of average)
- 47 of 58 counties declared local emergencies
- Marin County emergency pipeline across San Rafael Bridge



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1987-92

- Population about 30 million in 1990
- 23 counties declared local emergencies
- SWP & CVP made full deliveries during first four years of drought
- SWP cut to 0% agricultural & 30% urban in 1991 (however full Colorado River Aqueduct supply)



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1987-92 Drought Impacts

- San Francisco's system dropped to 25% of storage capacity in 1991
- Extreme cutbacks in Santa Barbara area, construction of emergency pipeline
- Severe rationing/water haulage in some small communities in North Coast, Central Coast, and Sierra Nevada foothill areas



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2007-09

- Southern California cities again set dry year records.
- 2007 Southern California wildfires
- CVP Westside SJV ag deliveries: 50%, 40%, 10%
- SWP deliveries: 60%, 35%, 40%
- Affected areas – Westside SJV, Russian River service area



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Local Drought – Southern California, 1999-2003

- Water haulage in small mountain communities – e.g. Idyllwild
- 2002 – then-driest year of record for Los Angeles and San Diego
- Small system & private residential wells go dry in interior foothill areas, no large system impacts
- 2003 wildfires



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Water Conditions



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Present Dry Conditions Water Year 2012

- California's first dry year since 2007-09 drought
- Followed a wet 2011
- Generally good statewide reservoir & groundwater basin storage
- SWP allocation 65%, CVP south of Delta ag at 40%, Friant Class I at 50%
- Colorado River Basin continues dry, however very low probability of California shortage in this decade



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Present Dry Conditions

Water Year 2013

- Second dry year
- Very wet start to water year followed by record dry Jan-May; most reservoirs statewide replenished by wet early winter
- SWP allocation 35%, CVP south of Delta ag at 20%, Friant Class I at 62%
- Colorado River Basin continues dry, however very low probability of California shortage in this decade



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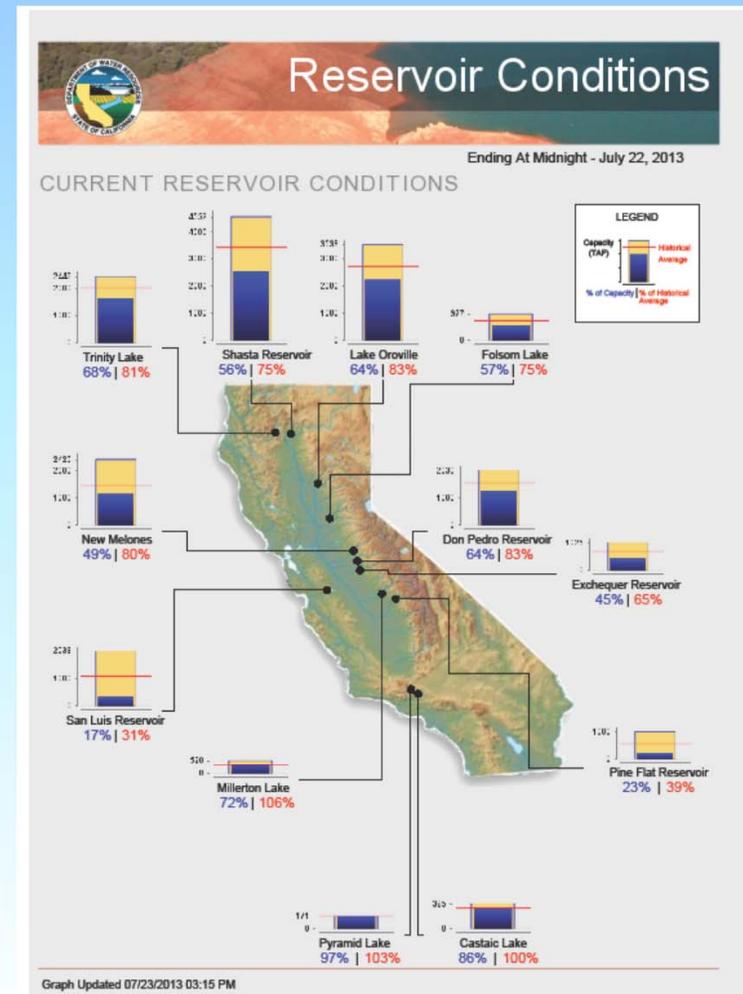
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Runoff and Storage - WY 2013

- Sacramento Four River Runoff ranks 24th percentile
- State 154 Reservoirs – 20.7 MAF (79% Average) for July
- State 154 Reservoirs – End of September Storage Projected to be at 76% Average



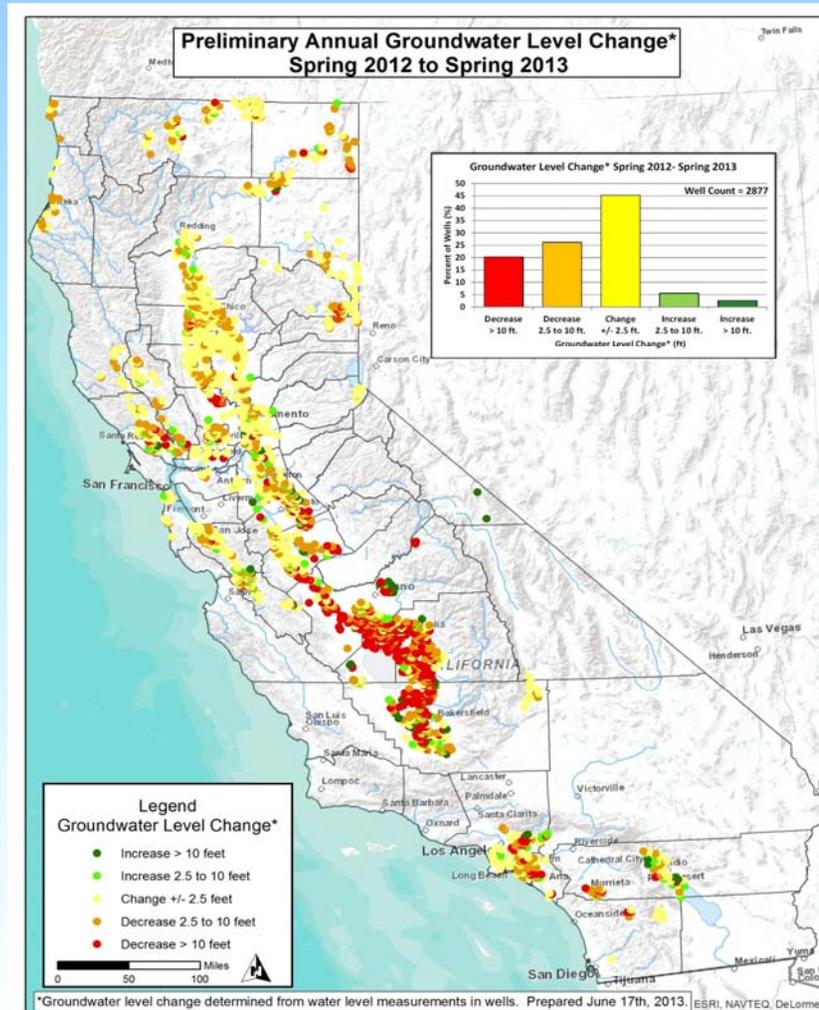
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ANNUAL Groundwater Level Change Spring 2012 to Spring 2013



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IWM Investments and Initiatives



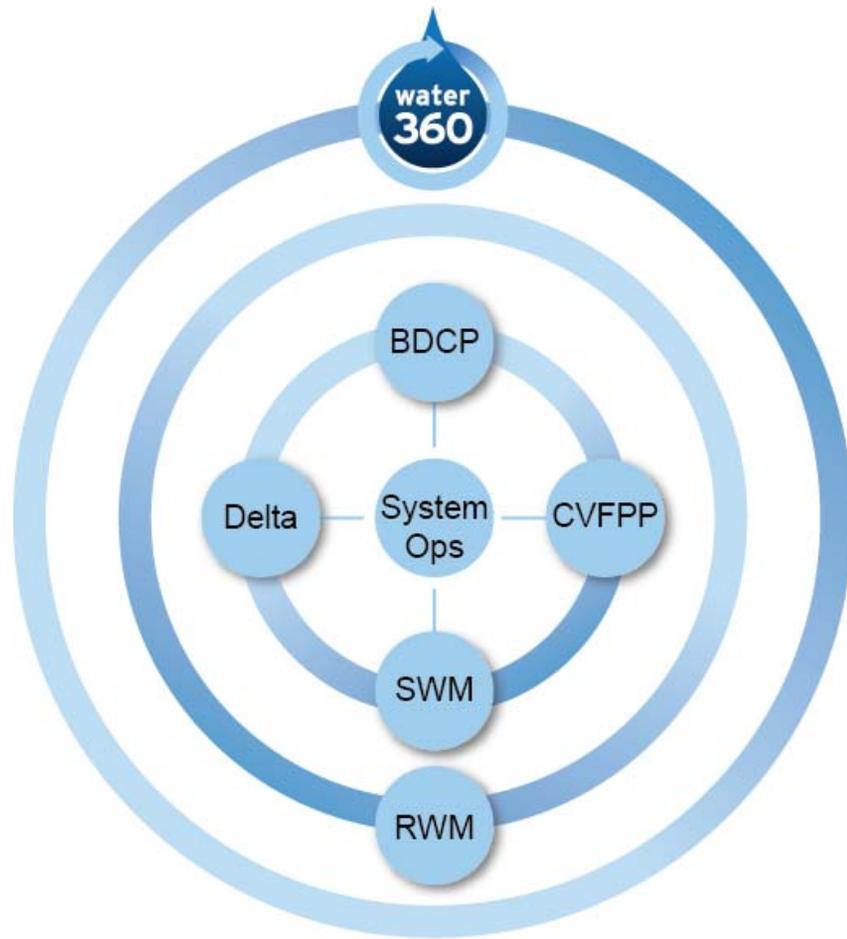
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Interaction of IWM Initiatives



Bay Delta Conservation Plan (BDCP)

A comprehensive and long-term plan to ensure continued water supply reliability and protect Delta ecosystem

Central Valley Flood Protection Plan (CVFPP)

Plan to improve Central Valley flood control facilities and also provide ecosystem enhancement opportunities

Delta

Implementation of projects to protect Delta resources

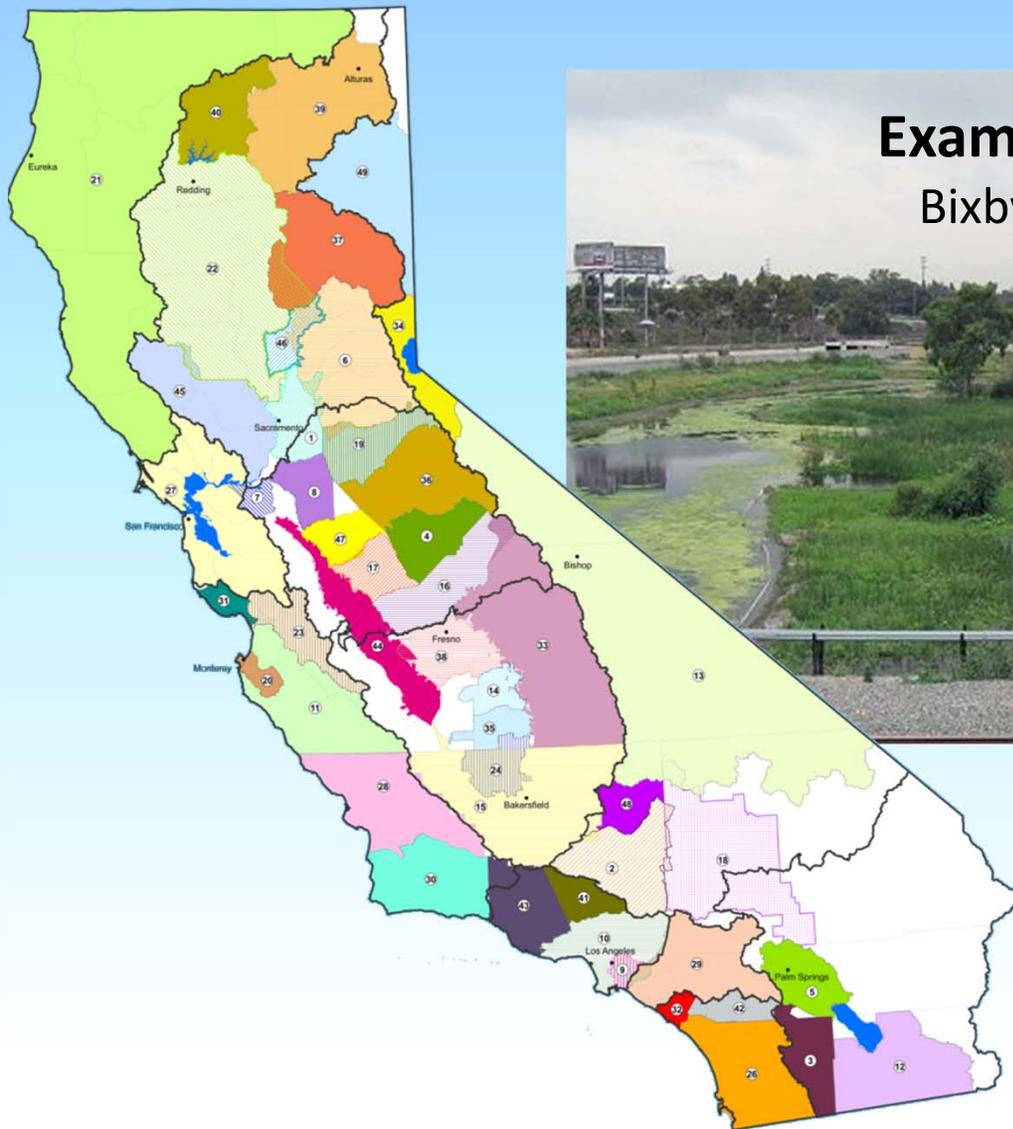
Statewide Water Management (SWM)

Actions to enhance system reliability and build resiliency

Regional Water Management (RWM)

Activities to promote sustainable use and management of regional water resources

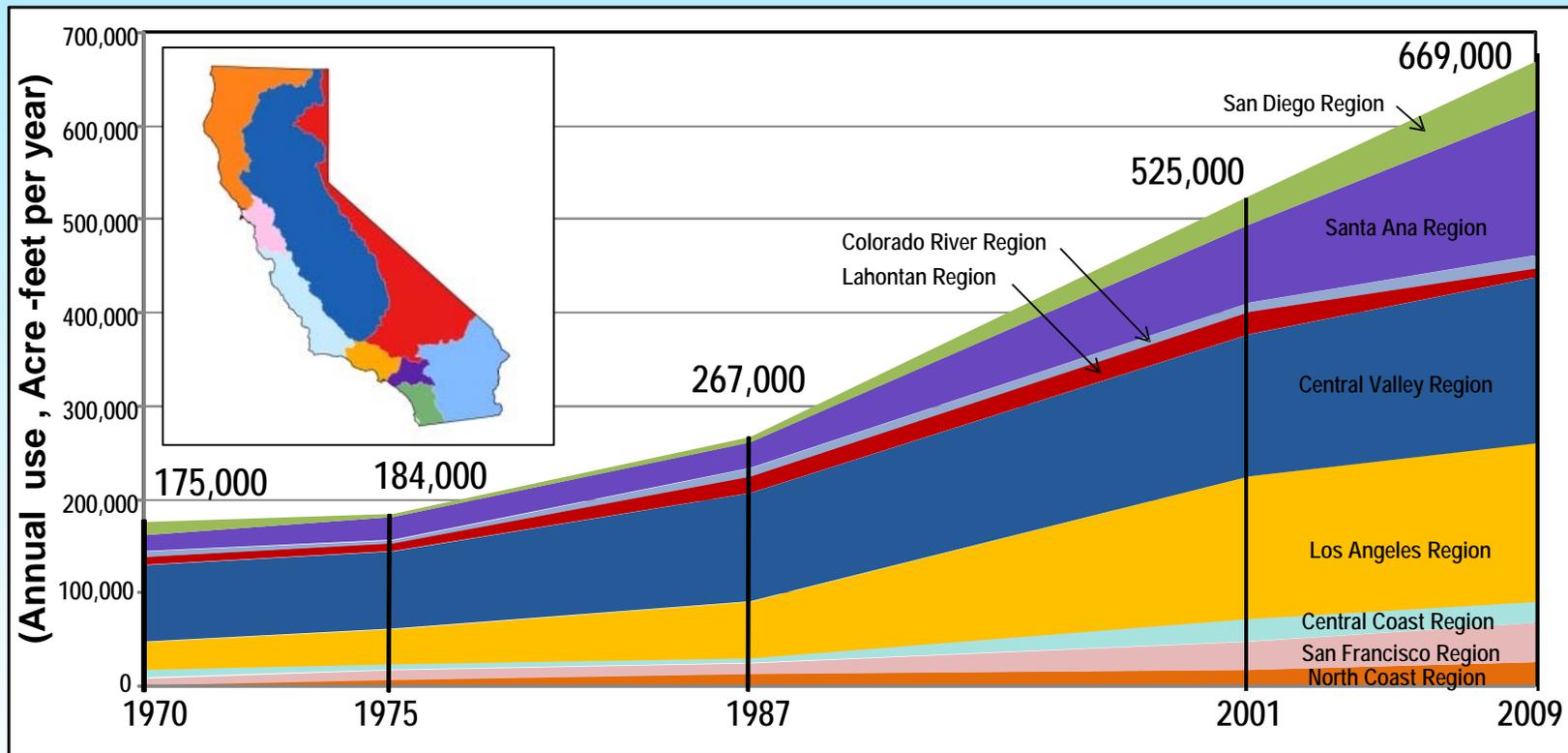
Integrated Regional Water Management (IRWM)



Example IRWM Project
Bixby Marshland Project

48 Regional Water Management Groups

1970-2009 Municipal Recycled Water Use (by Region)



2009 Total 669,000 acre-feet

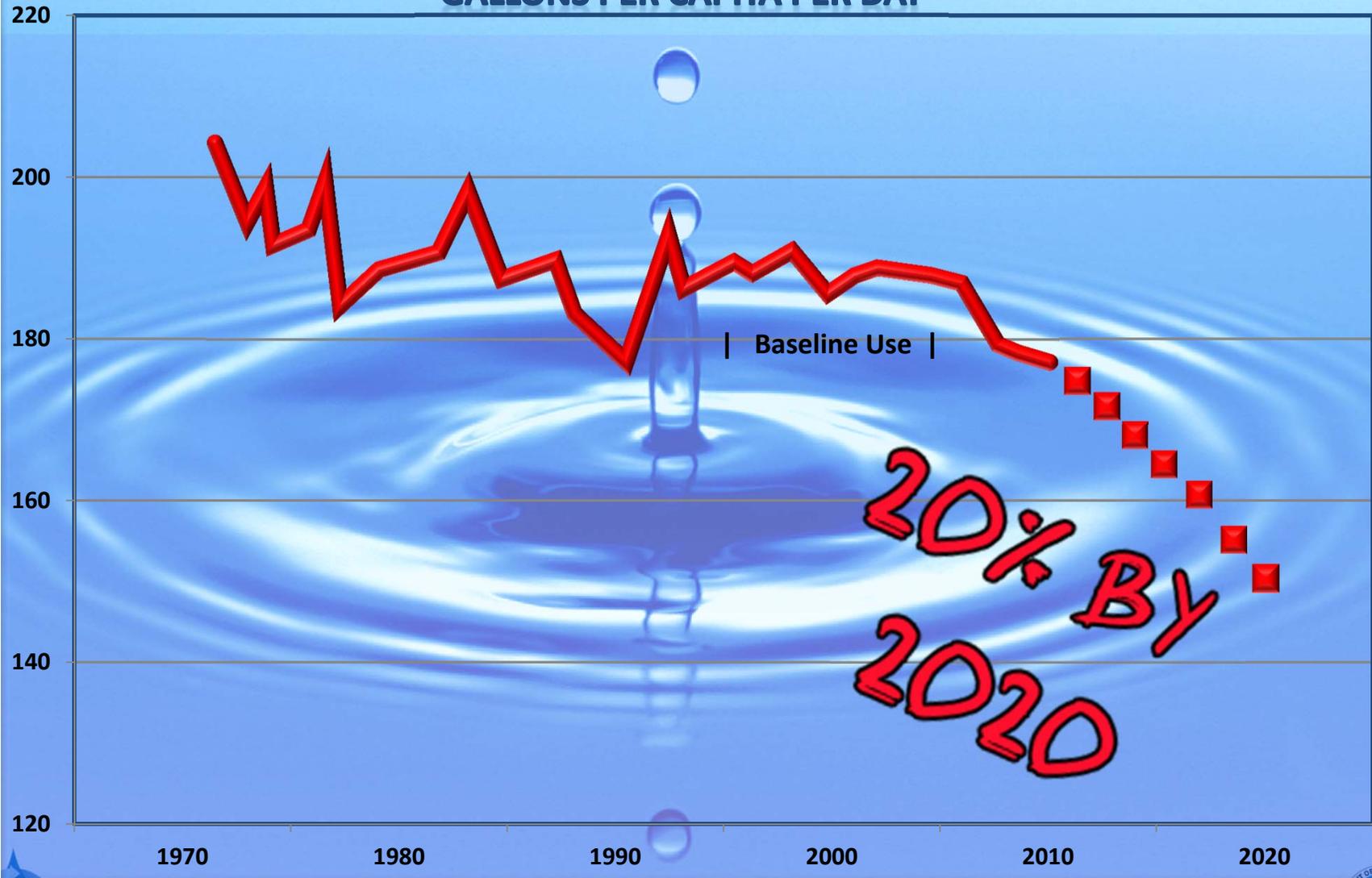
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GALLONS PER CAPITA PER DAY



20% BY 2020



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Drought Response



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Many Definitions of Drought

- Meteorological drought
- Hydrological drought
- Regulatory drought
- US Drought Monitor (primarily for non-irrigated agriculture)
- Sector-based definitions
- There is no magic definition – drought is a function of impacts (which are localized in extent)



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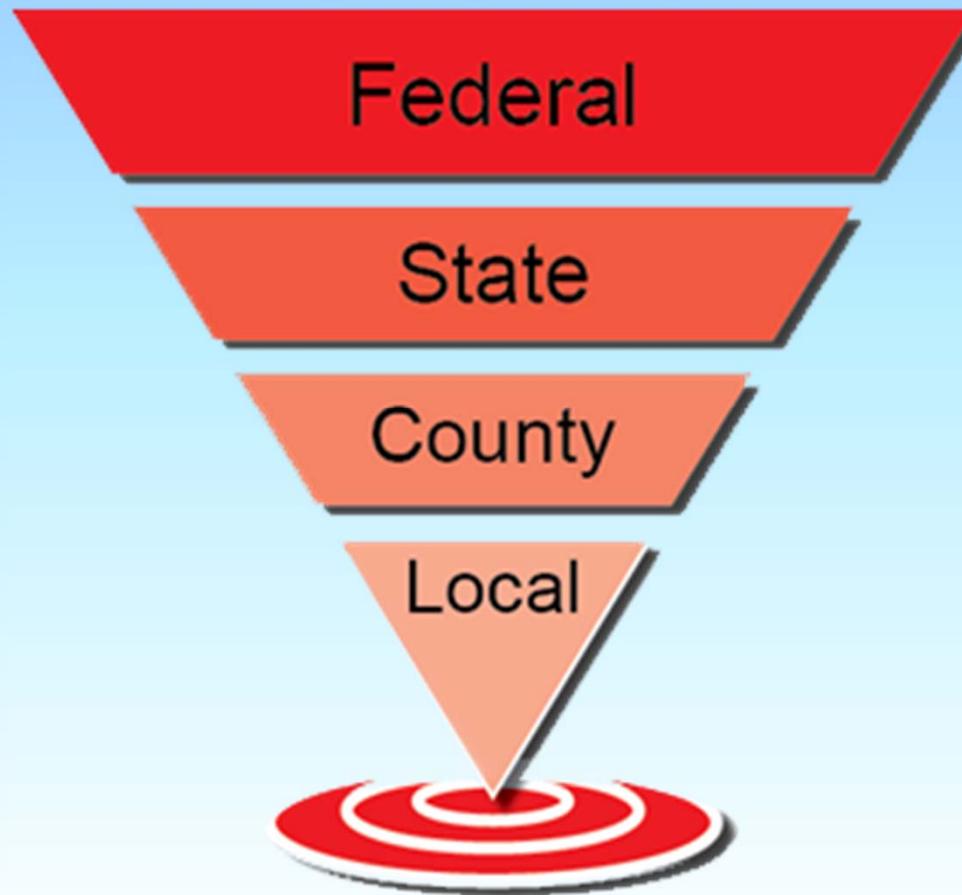
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State Emergency Plan

Emergency Response



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Is Multi-Year Drought a State-Level Emergency?

- Generally, no.
- Drought becomes a state-level emergency only when a local area's resources are insufficient to manage the emergency
- If local resources are exhausted and a Governor's emergency proclamation is issued, CALEMA and DWR will respond as coordinated through SEMS



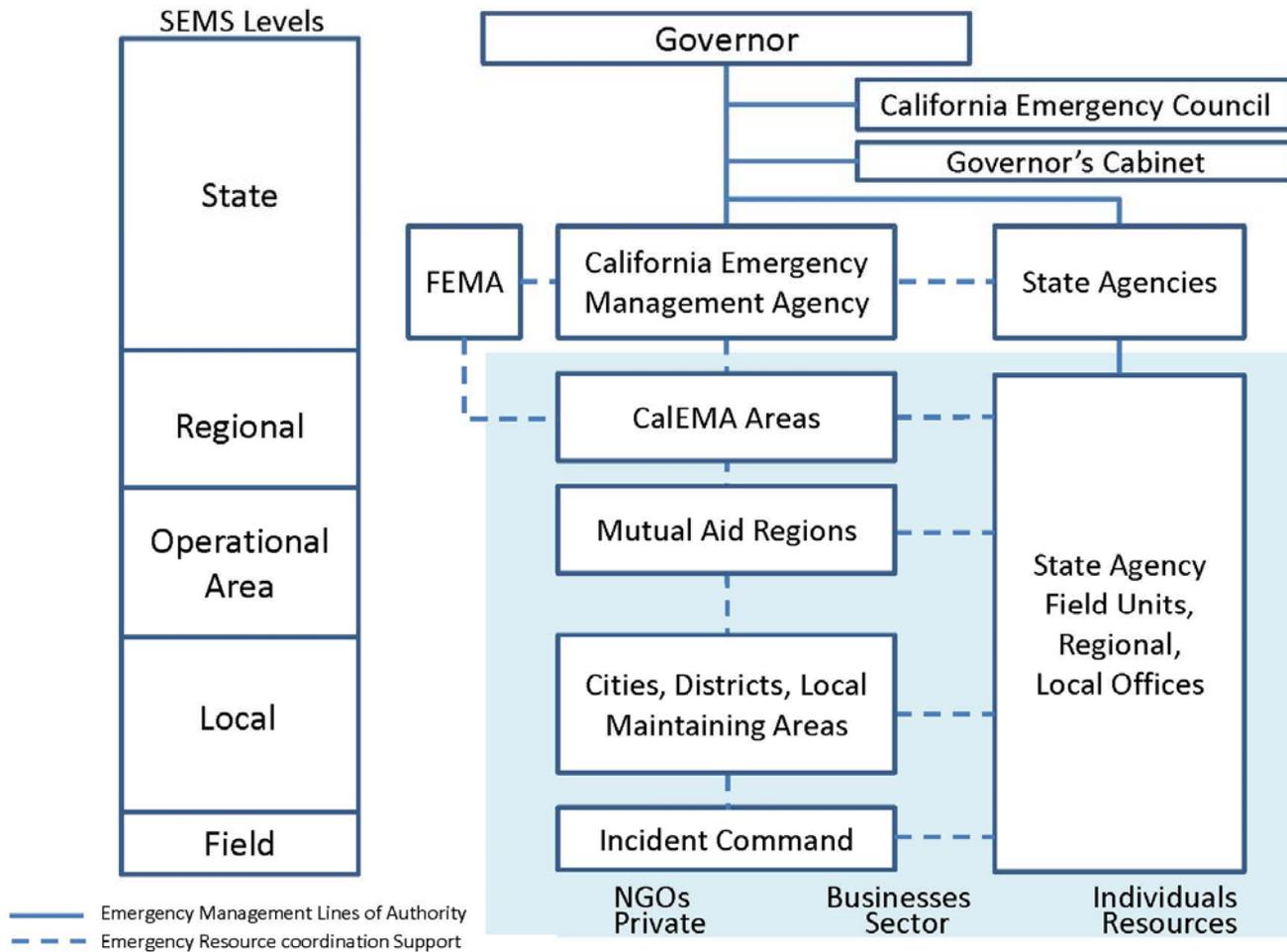
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California Emergency Organization



DWR Preparations for a Possibly Dry 2014

- Planning fall outreach efforts to emphasize the need for water suppliers and users to plan for a dry 2014 and to be ready to implement conservation measures as necessary
- Analyzing new statewide groundwater level information being provided via CASGEM, and contracting with JPL for San Joaquin Valley subsidence monitoring to track recent land subsidence
- Funding a research-level seasonal climate forecast for the winter rainy season
- Facilitating water transfers
- Tracking impacts of dry conditions
- Evaluating the need to convene a state agency coordination committee in early 2014



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Funding Constraints on DWR Drought Response Capabilities

- “Fiscal Cliff” for DWR programs (staff capabilities) supported by expiring bond funds
- Little flexibility to use remaining bond funds in local assistance programs (e.g., IRWM) for drought response actions, as compared to prior bond acts
- No funding source for small water system problems



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Lessons Learned from Past Droughts

- Impacts are highly site-specific, and vary depending on the ability of water users to invest in reliability
- Small water systems on fractured rock groundwater sources are most at risk of public health and safety impacts
- Larger urban water agencies using their Urban Water Management Plans (UWMPs), can manage 3-4 years of drought with minimal impacts to their customers



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